

Asian Biting Fly Studies V: Tabanidae. Records from Thailand

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Following the work of Burton (1978) it would seem inappropriate to add another study to the tabanid fauna of Thailand. However, the material under consideration in the present study was collected by this author almost 20 years earlier; at that time it was recognized to include a number of new forms, all of which have since been described by Burton (1978) or Philip (1960a). The collections reported in this study strongly supplement that of Burton and provide much new data on the distribution of southern Thailand species.

1. *Tabanus agnoscibilis* Austen, 1922

1922. Austen, Bull. Ent. Res. 12:453, f.

1978. Burton, Tabanini of Thailand:100, synonymy.

A single male taken at a light in my living quarters. This is the first record of this species from Chiangmai Province.

Record.—Chiangmai Province, Chiangmai, 10 July 1959.

2. *Tabanus aurilineatus* Schuurmans Stekhoven, 1926

1926. Schuurmans Stekhoven, Treubia 6-Suppl.:231, f, m.

1978. Burton, Tabanini of Thailand:68.

Two specimens were captured at a light at about 2200 hours in jungle villages. Both specimens agree well with the form ascribed to this species by Burton. The frontal callus of the two is like that figured by Schuurmans Stekhoven (fig. 94b). This is the first record of this species in Trang Province.

Records.—Trang Province, Lamor, Vill. #4, 9 May 1960, f; Vill. #3, 8 June 1960, f.

3. *Tabanus brunnicolor* Philip, 1960

1960b. Philip, Studies Inst. Med. Res. Malaya No. 29:43, new name for *T. brunneus* Macquart, 1834, f, m, synonymy.

The tomentum of the subcallus and clypeus is whiter in a specimen taken in May. Also, its median dorsal abdominal triangular markings are narrower and somewhat shorter and whiter and the ventral abdominal markings do not show median darker areas as clearly as specimens taken in June.

I am not sure why Burton did not include this species in his review of the Thai fauna.

All specimens were taken along the edge of a jungle stream.

Records.—Trang Province, Chong, 13 May, 15, 24 June 1960, 3f.

4. *Tabanus brunnipennis* Ricardo, 1911

1911. Ricardo, Rec. Indian Mus. 4:160, f.

1978. Burton, Tabanini of Thailand:70.

Of three specimens representing this form, the one from Sarapee is darkest with a strongly contrasting mid-dorsal abdominal stripe and lateral spots on TII; there are faint small lateral spots on TIII.

Records.—Chiengmai Province, Sarapee, Vill. #5, 23 July 1959, f; Trang Province, Bang Mark, 29 April 1960, f, Trang, 10 May 1960, f.

5. *Tabanus ceylonicus* Schiner, 1868

1868. Schiner, Reise Novara, Diptera, Band 2:93, f.

1978. Burton, Tabanini of Thailand:38, synonymy.

Record.—Chiengmai Province, Chiengmai, 1 Nov. 1959, f.

6. *Tabanus dissimilis* Ricardo, 1911

1911. Ricardo, Rec. Indian Mus. 4(6):180, f.

1960b. Philip, Stud. Inst. Med. Res. Malaya No. 29:45.

The frontal callus of a single specimen agrees well with that figured by Ricardo (fig. 15) and by Schuurmans Stekhoven (1926:369). The center of distribution of this species seems to be to the south of Thailand. Burton (1978) did not include this species in his review although Schuurmans Stekhoven (1928:443) reported it from Trang Province.

Record.—Trang Province, Trang, 3 March 1959, f.

7. *Tabanus hybridus* Wiedemann, 1828

1828. Wiedemann, Aussereuropäische zweiflügelige Insekten 1:57, f.

1926. Schuurmans Stekhoven, Treubia 6-Suppl.:235.

These Thai specimens agree well with the form recorded by Philip (1960b:48) from Malaya; the frons corresponds closely to that figured by Schuurmans Stekhoven (Text fig. 97a). The series shows very little variation and I suggest that the variable Schuurmans Stekhoven material should be examined to determine whether more than a single species is involved. Secondly, the Wiedemann type, or topotypic material from Macao, needs to be studied to determine if it, the Philip material and specimens included here as *hybridus* are conspecific.

This is the first record of this species from Thailand and for the time, it represents the northernmost population of *hybridus*. Capture was along a jungle stream.

Records.—Trang Province, Chong, 19 May 1960, f; 15 June 1960, 8f; 29 June 1960, 5f.

8. *Tabanus subhybridus* Philip, 1960

1960a. Philip, Studies Inst. Med. Res. Malaya No. 29:22, f.

This species was taken flying with *hybridus* and can be distinguished from it by its deeper orange appearance. Although Philip indicates that his specimens are rather small (13 mm), the forms from Thailand are equivalent in size to *hybridus*.

Despite other minor differences, these southern Thai forms correspond quite closely to the description of *subhybridus*.

This is the first record of this species from Thailand and it represents the northernmost population of *subhybridus*. All were taken in a Shannon trap along a jungle stream.

Records. —Trang Province, Chong, 15 June 1960, 2f; 29 June 1960, f.

9. *Tabanus konis* Philip, 1960

1960a. Philip, Studies Inst. Med. Res. Malaya No. 29:17, f.

1978. Burton, Tabanini of Thailand:99, synonymy.

Four specimens were taken at a light. The series represented by these collections is highly variable in respect to size (10–13 mm) and markings; abdominal tergites vary from entirely concolorous to with up to the first four tergites lighter than the postermost ones. Totally unrubbed specimens have scattered light-colored mesonotal and scutellar setae and a distinct median dorsal abdominal line of these on TI–TVI, the line being slightly expanded laterally on TI.

Records. —Chiengmai Province, Chiengmai, 6, 10, 19 July 1959, 3f; Tawan Tan, 14 July 1959, 2f; Chompu, 27 July 1959, f; Sarapee Distr., July 1959, f.

10. *Tabanus leucocnematus* (Bigot) 1892

1892. Bigot, Mem. Soc. Zool. France 5:656, *Atylotus leucocnematus*, f.

1926. Schuurmans Stekhoven, Treubia 6-Suppl.:321, redescription.

This, the earliest-named species of a large group of radiating Asian tabanids of distinctive appearance, includes the *biannularis* group of Philip (1962) and Burton (1978:17). This large complex would be better called the *leucocnematus* group. Considerable speciation has occurred and I attribute 28 species to it, some of which, including the name species, are poorly known. The characteristics defining this group are a combination of the following: subcallus bare; callus subrectangular and either wider than high or higher than wide, connected or not to an oval-shaped median callus which may be as large as the callus; scutellum with white or yellow pollinosity and setae, in most species contrasting sharply with a darker scutum which may have a band of light pollinosity and setae along the anterior margin; white or yellow tibiae with apical dark rings; abdomen generally with distinctive bands or wide spots along the posterior margin of some of the tergites. Preliminary evidence seems to indicate that the polymorphic form of the spermathecae in each species I have studied as well as the highly membranous characteristic of the spermathecal ducts serve to indicate the close relationships within this group. Much more study needs to be done before incorporating these characteristics into the diagnosis of this group. If these characteristics should prove to be valid after widespread study of species considered to be in the group, it would be valid to resurrect the subgenus *Callotabanus* Szilady, 1926. Burton (1978:14) has discussed the validity of *Callotabanus* based on other criteria; I am not in accord with either his treatment of the subject nor with that of Philip. Within this complex, color and pattern generally fall into three major and one unique (*T. equicinctus* S.S.) category.

I have seen a single rather denuded female from Boun Tay, nr. Phong Saly, Indochina, 6 January 1929 (R. Wheeler) and I have a single female from Trang

Province, Chong, Vill. #1, 19 May 1960 (Surin et al.) which are provisionally referred to this species. Neither specimen is in perfect condition and they may not be conspecific with *leucocnematus* nor with each other. Differences are found in their size and in the color of their frontal areas; the antennae of the Thai specimen are missing. A study of the internal characteristics of the type and any specimens which have been referred to this species is necessary to resolve the identity and distribution of *leucocnematus*.

11. *Tabanus caduceus* Burton, 1978

1978. Burton, *Tabanini of Thailand*:27, f.

A single female flying at the same time as *macdonaldi* and *griseipalpis* was taken in a Shannon trap along a jungle stream just above a waterfall. In the field, its larger size and the anterior infuscation of its wing quickly separated it from those species. This is the southernmost collection of *caduceus* in Thailand, others being from the northern province of Chiangmai.

Record.—Trang Province, Chong, 15 June 1960, f.

12. *Tabanus griseipalpis* Schuurmans Stekhoven, 1926

1926. Schuurmans Stekhoven, *Treubia* 6-Suppl.:312, f.

1978. Burton, *Tabanini of Thailand*:28.

At the time of original description, Schuurmans Stekhoven described a single female of this species from Nakon Sri Tamarat in southern Thailand along with specimens from Sumatra and Java. There is some reason to wonder if these are conspecific considering the differences he noted in the frontal area of the head and in the subcallus. Burton indicates that of two specimens from Trang which Schuurmans Stekhoven later determined as *griseipalpis* (1928:443), one is certainly not.

Examination of my series of nine specimens shows the basal callus and median callus of eight of them to be separated and much like that in the 1926, Textfig. 142b (Java). The ninth has a partial lateral connection between the calli. Thus, a worn specimen could conceivably appear as Textfig. 142c (Thailand). Additionally, the subcallus of all my specimens is as figured in 142c which shows a median projection on the lower margin. Burton describes "a considerable amount of yellow hair on both the anterior portion and the hind margin of the scutum, . . ." Such setation is sparse anteriorly and either absent or virtually so on the posterior scutum of all of my specimens.

Until the types can be studied, it appears that the best course is to refer my series to that of the Schuurmans Stekhoven species.

All specimens were taken in a Shannon trap; that in May from jungle surrounding a small village, those in June from jungle along a stream above a waterfall.

Records.—Trang Province, Chong, 15 June 1960, 8f; Vill. #1, 19 May 1960, f.

13. *Tabanus macdonaldi* Philip, 1960

1960a. Philip, *Stud. Inst. Med. Res. Malaya*, No. 29:18, f.

Although my specimens show some differences from the original description, they agree in many characteristics with *macdonaldi*. The differences are as follows:

median callus shaped like a broad arrowhead; calli red-brown rather than black; TII-II with yellowish pollinose markings; no banding whatsoever on the sternites. Field notes mention a single green eye band. I hesitate to erect a new taxon for this form in the present state of knowledge of the *leucocnematus* group.

This is a jungle species and was taken in a Shannon trap along a jungle stream above a waterfall.

Records. —Trang Province, Chong, 19 May 1960, f; 15 June 1960, 2f.

14. *Tabanus monilifer* (Bigot) 1892

1892. Bigot, Mem. Soc. Zool. France 5:654, f, *Atylotus monilifer*.

1978. Burton, Tabanini of Thailand:104.

The most southern population of this species is represented by this collection. The spur vein which is rather short in this series does not occur at all on the wing of one specimen. Taken along a jungle stream.

Records. —Trang Province, Chong, 13 May 1960, 2f; 19 May 1960, 2f; 24 May 1960, f.

15. *Tabanus pristinus* Burton, 1978

1978. Burton, Tabanini of Thailand:84, f.

My specimens agree well with the original description except that those taken in October and December exhibit dark abdominal sternites. One of the specimens is almost twice the bulk of the other two although the difference in length is only about 4mm.

Records. —Chiengmai Province, Chiengmai, 29 October 1959, f; 23, 26 December 1959, 2f.

16. *Tabanus striatus* Fabricius, 1787

1787. Fabricius, Mantissa Insectorum 2:356, f.

1981. Burger and Thompson, Proc. Entomol. Soc. Washington 83:340, review of the *striatus* complex, figures.

Records. —Chiengmai Province, Chiengmai, 10 July 1959, f; 4 August 1959, f.

17. *Tabanus unicus* Burton, 1978

1978. Burton, Tabanini of Thailand:116, f.

There are some differences between my specimens and the holotype. My southern forms have a darker and differently shaped subcallus and less developed markings on the abdominal tergites. Data on the collection of these specimens are not available and they can only be recorded as having been taken in Trang Province between early March and the middle of July 1959.

18. *Chrysops dispar* (F.), 1798

1798. Ent. Syst. Suppl.:567, *Tabanus*, m.

1960b. Philip, St. Inst. Med. Res. Fed. Malaya No. 29:38.

My personal experience with this species involves its distribution in both Thailand and Nepal. Except for darker pigment in high altitude Nepalese specimens, I find no differences in the populations from these two areas. This fly was on the

wing in large numbers during early and middle June in north central Nepal; a single specimen was collected in the south central terai during early July and the coloration of this specimen is very much like those from Thailand.

Records.—Chiengmai Province, Chiengmai, 1959; 28 June, 2f; 10 July, f; 13 July, f; Sarapee District, July, 6f; Vill. #4, 23 July, 2f; 6 July, f; Trang Province, Bang Mark, 26 April 1960.

19. *Chrysops fixissimus* Walker, 1857

1857. Walker, J. Linn. Soc. London 1:112, *fixissima*, f.

A single female taken in a Shannon trap within the edge of the jungle during the early afternoon. This represents the first record for this species in Thailand; its principal distribution lies to the south of this area.

Record.—Trang Province, Chong, 15 June 1960.

DISCUSSION

Three species of *Tabanus* and one of *Chrysops* are reported for the first time from Thailand; these are *T. hybridus*, *T. subhybridus* and *T. macdonaldi* from Malaya and *C. fixissimus*. Two other species, *T. brunnicolor* and *T. dissimilis* are confirmed as part of the Thai fauna. Others of the nineteen (19) tabanid species reported represent extensions of the range of these forms in Thailand or in respect to their total known range.

Problems with speciation and variation occur in respect to the *leucocnematus* group. Further studies are needed to ascertain the identity of a number of forms described by several authors and the relationship of those to forms such as those included in this review.

A review of some major assemblages of species flying on the same date and often at the same hours is of some interest.

19 May 1960. Chong: *griseipalpis*, *hybridus*, *macdonaldi* and *monilifer*.

15 June 1960. Chong: *brunnicolor*, *caduceus*, *griseipalpis*, *hybridus*, *macdonaldi*, *subhybridus* and *C. fixissimus*.

29 June 1960. Chong: *hybridus* and *subhybridus*.

10 July 1959. Chiengmai: *agnoscibilis*, *konis*, *striatus* and *C. dispar*.

23 July 1959. Sarapee: *brunipennis* and *C. dispar*.

All collections at Chong were taken at the same site.

Specimens will be deposited at the California Academy of Sciences, Cornell University and the National Museum of Natural History.

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